ASARCO

EAST HELENA PLANT

M. A. SHARP

November 6, 1986

Mr. Gene D. Taylor
Remedial Project Manager
U.S. Environmental Protection Agency
Federal Building - Drawer 10096
301 S. Park
Helena, MT 59626

Re: WATER RECIRCULATION TANK SYSTEM

Dear Gene:

At our November 20, 1986, East Helena Superfund meeting, Asarco informed the EPA that the Thornock Lake impoundment had been replaced by a recirculation tank. As agreed, I am writing to provide you with a discussion of the technical details associated with this project.

The recirculation tank proper is circular in design measuring 10 feet in height and 40 feet in diameter. The tank shell is comprised of 1/4 inch continuous steel plate that has been joined with leakproof welds into its present configuration. The tank is divided into two equal sections by a 4 foot 6 inch weir wall that provides a method for suspended particulate settlement. The inlet and outlet piping to and from the tank is designed to allow each side of the two weir wall sections to act independently during periods of sediment removal. The tank provides a maximum holding capacity of 93,000 gallons with an operating capacity at the weir wall height of 42,000 gallons.

An emergency overflow drain that allows water to flow into the Thornock Lake impoundment has been positioned at the 74,000 gallon level. The steel interior surface of the tank has been encapsulated with three coats of metal bonding epoxy paint to inhibit corrosion. The steel exterior surface of the tank and associated water transfer piping has been protected with a zinc chromate rust inhibiting primer. The tank has been insulated with 2 inch fiberglass batting which has been covered with corrugated aluminum sheeting.

ASARCO Incorporated, P.O. Box G, East Helena, MT 59635
(406) 227-7100, Telex 31-3120

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The steel tank sits inside a partially-below-ground secondary containment, concrete vault which is hexagonal in design, and measures approximately 44 feet by 44 feet with 8 inch thick walls and flooring. The concrete has been reinforced with steel rebar and keyed with Vinylex Dumbell water stops at all joints. The tank is positioned on an 8 inch wide concrete curb that has been made an integral part of the vault. This curb varies from 8 to 12 inches in height to allow for proper sloping. The interior portion of the curbing (that area directly beneath the steel tank) has been backfilled with compacted sand which overlays plastic sheeting. Four weep slots have been left in the concrete curb to allow for drainage in the event of a tank leak. The entire vault floor is sloped at 1% grade towards a water monitoring collection sump. The sump which serves as the visual checkpoint in our leak detection system will be periodically inspected for the presence of water. A small sump pump will be routinely activated to remove any accumulation of water from rain or snowmelt. The concrete has been sprayed with a crystal seal to prevent deterioration from exposure.

The tank pumping system has been balanced by the utilization of bleeder lines in order to minimize pump and motor stress due to start/stop pulses. In the unlikely event of a main electric motor failure, an audible alarm will sound at the blast furnace area. Supervisory personnel from the blast furnace area will invoke an emergency contingent plan that calls for the activation of a twin, gas driven standby motor that will operate the pump. This gas driven pump will remain in service until repairs are completed on the main motor. Prior to the development of the water handling portion of the tank system, water which was previously removed from the Thornock Lake impoundment was transported in an underground piping system where it was dumped into an open ditch near the zinc fuming furnace. The water then gravity flowed through the ditch into the lower recirculation lake. In our new water handling system, this water is now directed into an existing 12 inch intake steel pipe that was previously used when the zinc fuming facility was operational. This practice, coupled with the redirection of the slag transfer facility cooling water into an identical pipe configuration, will eliminate all water flow in the open ditch.

We are currently contemplating removing accumulated sediment from the emptied Thornock Lake impoundment and routing that sediment into our process for metal recovery.

If your schedule permits, I would be happy to show you the new recirculation tank, as well as discuss any specific details which you may question.

Sincerely,

Jon C. Nickel

JON C. NICKEL
Industrial Quality Manager

JCN/car